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THE BRITISH JOURNAL OF DERMATOLOGY

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THE BRITISH
JOURNAL OF DERMATOLOGY.
NOVEMBER, 1912.

THE LIFE-CYCLE OF THE ORGANISM OF SYPHILIS.*

By J. E. R. McDONAGH, F.R.C.S.,
Surgeon, Out-patients', London Lock Hospitals; and Chief Assistant, Skin-Department, St. Bartholomew's Hospital.

Probably no discovery of an organism was more readily accepted than that of the *Spirochæta pallida* made by Schaudinn and Hoffmann in 1905. Those who laboured to find the cause of syphilis were legion, and, prior to the birth of the *Spirochæta pallida*, the research which received most attention was that of Siegel with his *Cytorrhyctes luis*. So firm has been the belief in the *Spirochæta pallida*, that that organism is taken for granted as being the sole agent of everything syphilitic. Now let us, for a moment, ask ourselves two questions:

(1) Why is the incubation period of syphilis so long?

(2) Why do not one or two injections of salvarsan cure every case?

If syphilis is conveyed by the passage of spirochætæ from one person to another, ought not the initial lesion to begin to show itself two or three days after intercourse, as is more or less the rule with bacterial infections, viz. ulcus molle, gonorrhœa, diphtheria, etc.? The diseases which have a long incubation period are nearly all due to protozoa. The incubation period is long because the infective organism has to go through a cycle of changes before it can give rise to symptoms. Since the *Spirochæta pallida* is a protozoon—an assumption which one may safely make, owing to its rapid destruction under salvarsan—is it not possible that it is only one of the phases in the life-cycle of the syphilitic parasite?

* A demonstration of the phases of the organism was given by the Author at the Meeting of the Dermatological Section, on Thursday, October 17th, 1912.

The action that salvarsan has on spirochætæ in general is phenomenal. No spirochætæ are found in films made from the discharge from a chancre, after forty-eight hours, following a single injection. If the action is so marked, even on the surface of a lesion, how much more pronounced must it be in the deeper parts? In fact, all the spirochætæ must be, and no doubt are, killed by the first or second injection. In spite of this, recurrences occur again and again.

In relapsing fever, for instance, and in yaws, one or two injections of salvarsan at the most are all that are required to cure every case. On the other hand, in sleeping-sickness the trypanosomes vanish almost immediately after an injection, but they soon return into the general blood-stream. Trypanosomiasis and syphilis are therefore not unlike, and the frequent recurrence of symptoms met with in both diseases is no doubt dependent on the cycle which the parasite goes through in the body of the host.

These are a few of the points which have puzzled me so much of late, and have stimulated me to inquire a little deeper into the life-history of the *Spirochæta pallida*, since I thought it was quite possible that the syphilitic organism went through a series of changes common to protozoa.

I started off with the idea that the *Spirochæta pallida* was the male gamete of some unknown protozoon.

The reason for thinking that it was an end-phase of some cycle was due to the fact that I had never seen a *Spirochæta pallida* divide. If all syphilitic lesions are due to the *Spirochæta pallida*, and if the infection is a direct one of that body from one person to another, it is surely odd that we do not see division in every film we look at. This point, in itself, must suggest that the *Spirochæta pallida* is not to blame for all.

It is doubtful whether the *Spirochæta pallida* divides at all. Has it any need to? In my opinion, No.

The variation in the sizes of the different spirochætæ, which is often explained as being the result of transverse fission, is probably dependent upon their development.

The start is an undifferentiated coil, concerning which some remarks will be made later; this coil breaks up into spirochætæ, which are short, thick, and vary from being almost straight to slightly twisted. In the next stage, the spirochæta is fine and evenly coiled, but short;

and finally, one gets a perfect *Spirochæta pallida* with about fifteen coils.

All variations in the number of coils from about nine to fifteen or more are found.

It is not uncommon to find a spirochæta with a bulbous extremity at one or both ends, or even in the centre.

Opinions differ as to the nature of the swelling. Some observers see it in the spore-stage of the spirochæta, and they assert that the swellings are formed when the spirochæta is in the act of dying; while others hold that they play some part in the multiplication of the organisms.

I have watched specimens alive for hours by the dark-ground illumination method, and I cannot help thinking that the swellings which are highly refractile are granules from the leucocytes which have been attracted by the spirochætæ.

The granules have their origin in the leucocytes, leave them and float about in the plasma; they show marked Brownian movement, and can, therefore, wander about easily. I have seen these bright bodies attach themselves to the spirochætæ, and when they do so along the length of the organism, and not at its extremities, it appears as if the granule were lying on the spirochæta, rather than in the middle or body of the parasite.

It has been mooted for some time past that the *Spirochæta pallida* had a resting stage—in fact Schaudinn was at work on this very point just prior to his untimely death.

Prowazek was under the impression that the *Spirochæta pallida* rolled up into a ball. Similar circular bodies were also found by Hoffmann in the spleen of a congenital syphilitic, and intermediate stages in unrolling and rolling-up were described by him. The resting stage, as just described, was held responsible for the long incubation period of syphilis. Kryzstalowicz and Siedlecki described a sexual development, in that, short, thick, nucleated bodies, which they looked upon as macrogametes, gave rise, by a process of division, to microgametes; but these authors afterwards altered their views.

For my research I cut sections of chancres, lymphatic glands and various forms of syphilitic skin-lesions, and examined films obtained from their juice, both *in vivo*, by the borax-methylene-blue film method, and by fixed specimens. I paid most attention to the lymphatic glands.

as I thought the cycle was more likely to take place there than anywhere else, owing to the fact that in spite of vigorous syphilitic treatment the adenitis takes months to subside.

I examined seventeen lymphatic glands, both before and after salvarsan, ten chancres, in various stages, from an early erosion to the slight induration left by a healed primary sore, and over twenty various skin-lesions, both before and after salvarsan.

For controls, I examined four lymphatic glands enlarged by gonorrhœa, three enlarged by soft sores, three normal glands, and various glands enlarged as a result of tuberculosis, lymphadenoma and malignant disease, also five soft sores and skin-lesions consisting of a plasmoma, or granuloma, viz. lupus, sporotrichosis, etc.

In most instances in the syphilitic group (some of the skin-lesions excepted), and in no instance in the control group, did I find any of the bodies which I am about to describe, and as these bodies were found exclusively in syphilitic tissue, I venture to suggest that they may be phases in the life-cycle of the syphilitic organism.

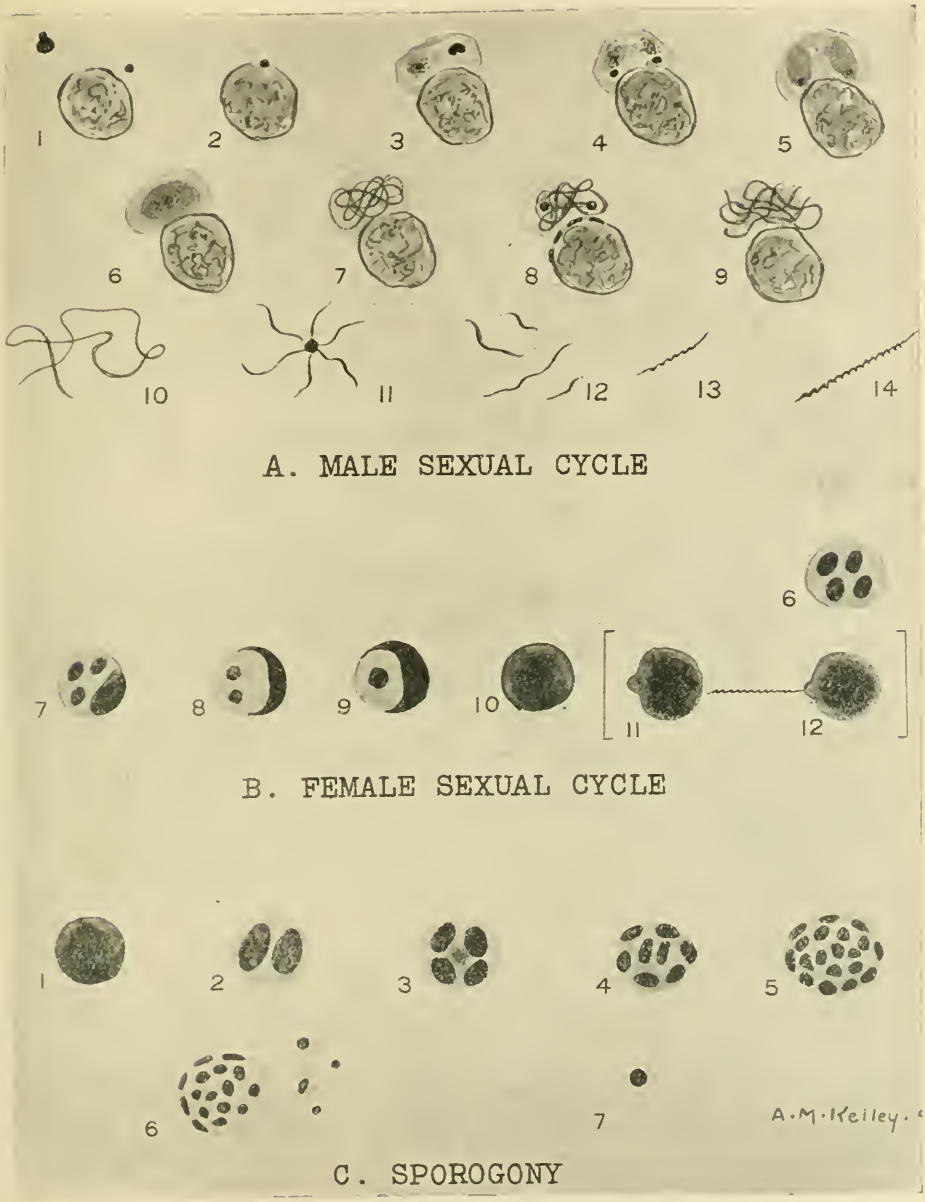
These bodies, I have seen in different films, and the interpretation I put upon them is the one that appears to me to be the most likely.

The commencement of the cycle is with a sporozoite or infective granule, and by means of its progression, since it is motile, the sporozoite reaches a cell and enters it; the cell is always a large mononuclear leucocyte.

Having entered a mononuclear, the sporozoite becomes motionless, and increases in size. The further development goes on within and at the expense of the protoplasm of the mononuclear cell, the nucleus of the cell always remaining intact, and the degenerated protoplasm forms an envelope around the sporozoite which has to be gradually increased in size according to the growth of the parasite. The sporozoite in some cases steadily increases in size, while in others it appears to divide. In the case where there is no division the development goes on until spirochætæ are formed—the male sexual cycle. In the case where there is division one half runs the course of the male sexual cycle, while the other runs the course of the female sexual cycle; the latter at this stage seems to leave the mononuclear.

It is possible that there are both male and female sporozoites, and that each enters a mononuclear on its own account, but the development of both male and female up to a certain point is so similar, and

PLATE I.



TO ILLUSTRATE MR. J. E. R McDONAGH'S ARTICLE ON THE LIFE-CYCLE OF THE ORGANISM OF SYPHILIS.

the female leaves the cell so early, that it is difficult to be absolutely certain whether a sporozoite is either male or female or made up of both.

Male sexual cycle.—The large trophozoite or merozoite becomes vacuolated and later transformed into an irregular coil. The coil later is found to be thicker in some parts than others, and there appear to be some club-shaped points. At the base of the coil, lying just above the nucleus of the cell, but in the protoplasm of the mononuclear, are some rod-shaped bodies, which stain better than the strands of the coil. I cannot make out the use of these rod-shaped bodies. The coil, which now appears to be extra-cellular, because the protoplasm of the mononuclear is so degenerated, becomes broken up into irregular, short, stout, and wavy bodies, and from these the delicate long and corkscrew-shaped organism, the *Spirochæta pallida*, develops. This is the microgamete, or adult male gamete, and it probably has no more necessity to divide than a spermatozoon. It sometimes happens that circular bodies with spirochætæ coming off, like the spokes of a wheel from the axle, are found in the coil and free outside the cell.

Female sexual cycle.—This is the same as the male up to the vacuolation of the merozoite. The female merozoite takes a circular form, and in the circle there appear to be four or five distinct pear-shaped bodies; at this stage the gamont becomes extra-cellular. Two of these pear-shaped bodies then fuse and become crescentic; the remainder, one by one, join in until a spherical mass is produced. This is, in my opinion, the adult female or macrogamete.

The act of fertilisation I have never seen, but it is highly probable that the spherical body forms a "cone of reception," which is touched by the microgamete; the microgamete must then penetrate the macrogamete until its pronucleus reaches the female pronucleus.

Spore stage.—After fertilisation a zygote is formed. The zygote then appears to divide into two and to subdivide into four. These four masses are the sporoblasts, and they are arranged around the circumference of the zygote; this outlying circular arrangement is kept up until the spores have been liberated and there is no further need for a casing.

Each sporoblast divides and subdivides until numerous sporozoites are formed; when examined *in vivo* the cell appears to be alive with the movement of all the sporozoites. The cell then bursts and the

sporozoites are set free to start the sexual cycles again. This completes the sporogony.

If what I have described is correct, the syphilitic parasite belongs to the order Sporozoa and to the sub-class Telosporidia, since the spores are formed at the end of the cycle. The order is probably the Coccidiidea and the species Leucocytozoon, hence the name of the syphilitic parasite should be *Leucocytozoon syphilis.*

The infection is probably conveyed by the sporozoite and not by the *Spirochæta pallida.*

The bodies visible in sections of syphilitic tissues are no doubt types of all the stages above mentioned, and the drawing will give the reader a much better idea of their appearance than a lengthy verbal account; these must not be confounded with the masses of protoplasm which are found both intra-cellular in the reticulated protoplasm of the endothelial cells and also extra-cellular; some of the masses stain green and others red with Pappenheim.

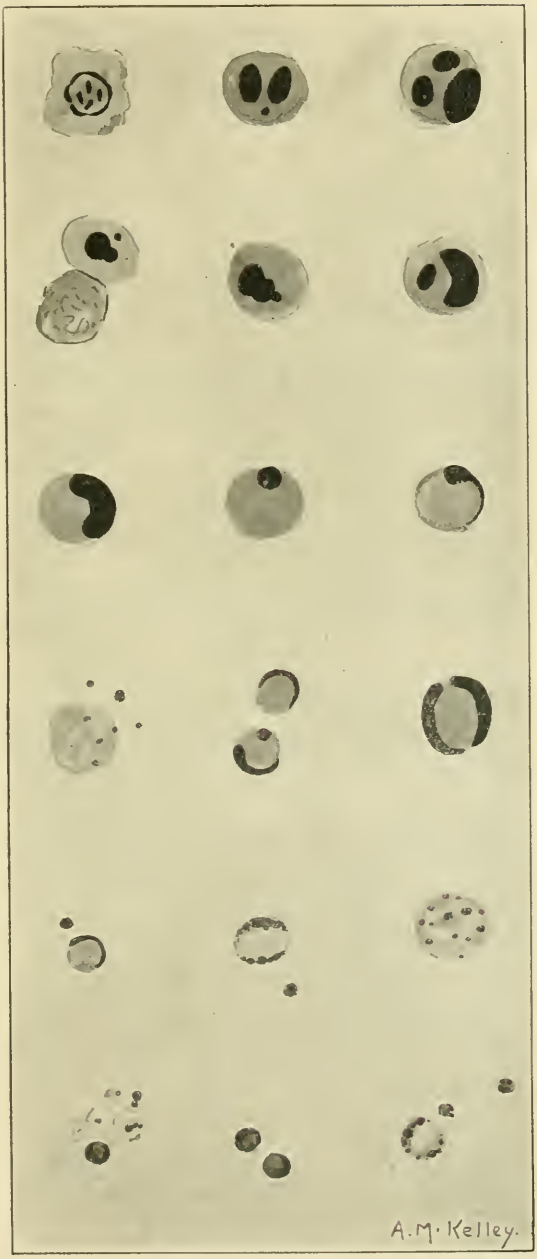
There is no doubt that these bodies can still be found after treatment with salvarsan, and it is yet impossible to say what action anti-syphilitic treatment has upon them. Whether it is desirable, or even necessary, to give as many injections of salvarsan as is now the rule, and whether our aim to obtain a negative Wassermann's reaction is a right one, are points which must remain *sub-judice,* as our interpretation of the Wassermann's reaction may be altered as the result of this discovery.

From a point of view of diagnosis the discovery of the life-cycle of the syphilitic parasite means a distinct gain, because bodies other than, and easier to find than, the *Spirochæta pallida,* can be demonstrated with ease, and the old difficulty of being unable to distinguish one granuloma from another in section is partly done away with.

The best method of examining specimens *in vivo* is to take a fat-free slide and made a film on it of borax methylene-blue; having allowed the stain to dry, a drop or two of secretion from a lymphatic gland, for instance, is put on to a cover-slip and the cover-slip pressed down on to the slide. By this means the cells are metachromatically stained, all the organisms are stained, and even the delicate *Spirochæta pallida* can be seen moving about with ease. For fixed films Giemsa's stain is the best, and for sections I prefer Pappenheim's stain (pyronin and methyl green) as described in

PLATE II.

Bodies seen in sections.



TO ILLUSTRATE MR. J. E. R. MCDONAGH'S ARTICLE ON THE LIFE-CYCLE OF THE ORGANISM OF SYPHILIS.

Archiv. für Dermat. u. Syph., Bd. cix, Heft 3, S. 447 (McDonagh "Über einige Transformationsformen der Plasmazellen"). In sections the bodies stain red, they are most abundantly found in a giant-cell formation (in the centre of a regional lymphatic gland) if there is one, or in the centre of a group of plasma-cells. They are frequently found in the walls of vessels; and in the vessels themselves among the red blood-corpuscles; I have seen free sporozoites. The bodies are also seen free in the lymphatic spaces.

For some help on the elucidation of the spirochætal coil I am indebted to Mr. E. H. Ross's paper, "The Development of a Leucocytozoon of Guinea-pigs," *Proceedings of the Royal Society of Medicine*, B vol. lxxxv, 1912). For assistance in obtaining material I wish to thank my house-surgeons at the London Lock Hospitals, who have kept me supplied since January, 1912, which was the time when I commenced my research.

RODENT ULCER OF THE BACK IN A BOY OF TWELVE.

By J. H. SEQUEIRA, M.D., F.R.C.P., F.R.C.S.:
Physician to the Skin-Department and Lecturer on Dermatology at the London Hospital.

Charles R—, a well-developed but rather anæmic boy, aged 12 years, was first seen at the London Hospital on October 1st, 1912. He was sent to the Hospital for the treatment of a growth upon his back.

The mother stated that when the boy was two years old she noticed for the first time a "mole" the size of a small pea over the left shoulder-blade. The growth was raised above the surface and was "crossed by a small blue vein." The tumour grew very slowly, and several times upon its being knocked there had been slight bleeding, but complete and rapid healing always occurred. In August, 1912, however, the lesion received a somewhat severe blow, and some yellowish discharge came from it for three weeks. The boy went to the sea-side and the sore rapidly healed. During the few weeks which followed the tumour had grown rather rapidly.

When seen on October 1st, 1912, there was a rounded flat swelling the size of a sixpence on the back, three quarters of an inch above the inferior angle of the left scapula. It had a well-defined, rounded, raised and beaded edge of translucent pink colour, and on the lower

margin of the growth the edge was crossed by fine vessels. A dry brownish crust covered the middle of the growth, which had all the clinical characters of the rodent ulcer. There were no enlarged glands in the axilla.

There were no other changes in the skin, and no moles. A biopsy was performed, and the portion of the upper part removed was sent to the Pathological Institute. Dr. Turnbull reported as follows:

"*Basal-celled carcinoma of skin of back.*—The nodule is covered by an epidermis with a well-defined horny layer. Beneath this there is a more or less lobulated growth composed of solid, narrow, anastomosing processes of small flattened cells. The anastomosing processes give a reticular structure to the lobules. The cells are very uniform in size and resemble the basal cells of the epidermis, in parts the processes are continuous with that layer. In a few spots the cells become larger and more nearly polygonal. In several of the lobules there are rounded spaces bounded by a zone of squamous cells. The spaces contain some sebaceous *débris*. The stroma within the meshes enclosed by the narrow processes is in parts extremely rarefied or replaced by shreds of a granular *débris*."

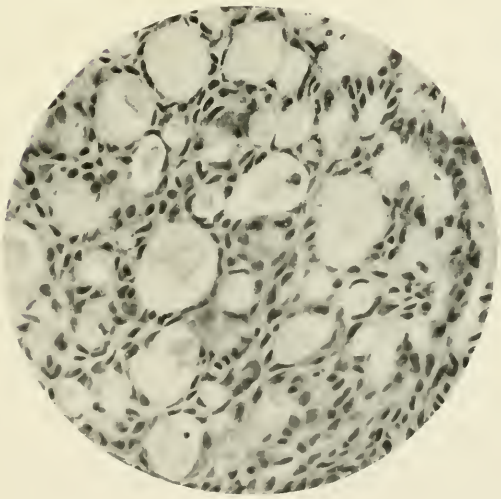
These features are well shown in the micro-photographs of the section.

Sixteen milligrammes of radium upon a flat plate covered with varnish and again with a rubber cap were applied for four hours on October 4th. A strong reaction followed the application, and on the separation of the crust the lesion appeared to be cured.

The case is of considerable interest on account (1) of the age of the patient and (2) the situation of the growth. In my first paper on the treatment of rodent ulcer by the X-rays in the *British Medical Journal* (January, 1901) I figured an early case of rodent ulcer on the ala nasi. It had been noticed when the patient was twelve years of age. And at the meeting of the Section in January, 1909, I showed a case of rodent ulcer beginning on the lower lid in a girl of fifteen. (This was cured by radium in 1904, *British Journal of Dermatology*, 1909, p. 57.)

Rodent ulcer is very rare off the face, and I have only seen one case on the back in this situation. It had involved a large triangular area extending from near the middle line to the angle of the scapula. This was in an adult male, and it resisted all attempts at cure.

Microphotograph of section. $\frac{2}{3}$ obj.



Microphotograph of portion of section showing the spaces described. $\frac{1}{6}$ obj.

TO ILLUSTRATE DR. SEQUEIRA'S CASE OF RODENT ULCER.

ROYAL SOCIETY OF MEDICINE.

DERMATOLOGICAL SECTION.

Meeting held on Thursday, October 17th, 1912, Sir Malcolm Morris, K.C.V.O., President, in the Chair.

Announcement.

The President announced with regret the retirement of Dr. Colcott Fox, a former President of the Section, owing to ill-health. He said that there was no member of the Section whose work had been more appreciated, both in the Dermatological Society of London and the Section of the Royal Society of Medicine, than that of Dr. Colcott Fox, and that it was with the very deepest regret that he had to make this announcement. A letter was read from Dr. Fox offering to the Royal Society of Medicine, through the Dermatological Section, his collection of memoirs, theses, and papers on skin-diseases. These were accepted by the Section with gratitude.

Votes of thanks were proposed to the retiring members of the Council and the retiring Secretary, Dr. Sequeira, for the excellent manner in which they had carried out the duties of their office.

Dr. Adamson showed three cases of *subcutaneous "sarcoid"* (or *hypodermic tuberculide*) of Darier and Roussy. The patients were a woman, aged 45 years, and two girls. All three patients appeared to be in good health but for the skin-affection. The skin-affection consisted of circumscribed mauve-coloured somewhat infiltrated patches of the size of a florin to areas of two or more inches in diameter. In the substance of these patches there were scattered reddish-brown nodules of the size of a pea, some of which were more easily felt than seen, while others projected slightly above the surface of the skin and were evident to the sight as nodules. These three cases corresponded very closely to the description given by Darier and Roussy of the eruption which Darier called "sarcoid," and which the two observers afterwards recognised as forms of hypodermic tuberculides nearly allied to Bazin's Erythema induratum scrofulosorum. The case of the woman was in all respects like the cases recorded by Darier and others. The other two cases differed in the age of the

patients (the affection being generally met with in middle-aged women). They were also notable in that the eruption began in both instances as patches of purplish mottling associated with a more general condition of livedo and with severe joint pains.

(1) The first patient, Rosina B—, was a married woman, aged 45 years. She was somewhat stout, and except for the eruption appeared to be in robust health. The eruption had begun two and a half years ago as a red spot 1½ in. above the right nipple. Then a second patch and a third had appeared on the right arm and on the left foot, and the margins of the ears had become red and swollen. The patches rapidly developed into irregularly shaped disc-like areas from one to several inches in diameter. They were of bluish-red colour, slightly raised and infiltrated, and embossed with reddish-brown nodules of the size of a pea, which could be more readily felt than seen. This case had been shown to the Section in February, 1910 (*Brit. Journ. Derm.*, vol. xxii, p. 89), as a case for diagnosis, and the condition had not altered to any marked extent since then. An injection of old tuberculin, ·005 c.c., had been given in May, 1910, and this had been followed by a general reaction, with the temperature rising to 101·2° F. and the production of a large erythematous node at the seat of injection in the back. A second injection in the arm of ·004 c.c. of old tuberculin in January, 1911, also gave a marked local reaction. The diagnosis of hypodermic tuberculide or "sarcoid" of Darier was then made.

(2) The next patient was a healthy-looking, rather stout little girl, Lilly G—, aged 10 years. The eruption had been present with varying intensity for five months. It first appeared as painful and tender patches on the arms and knees, like bruises, after she had been in bed for two weeks with pains in the limbs and joints. On July 5th (three months ago) the skin-affection consisted of (1) patches of deep purple mottling, having a reticular pattern which corresponded in some measure with the network of Livedo annularis. These lesions were situated on the outer side of the right arm and forearm, on the left arm, on the front of the right knee, and on the right calf. There was no feeling of induration in these patches, and they disappeared on firm pressure, except for a little staining which remained. (2) A general tendency to Livedo annularis. On September 4th there appeared fresh lesions on the thighs and buttocks,

and those upon the arms became more pronounced. These fresh lesions were in the form of large dusky-red areas, in which there were several pea-sized red-brown nodules of the size of a small pea, distinct and firm to the touch, and apparently situated in the deeper part of the skin. The reticular character of the patches was pronounced, and the nodules appeared to occupy the lines of the network. The patient appeared otherwise in good health, and a thorough physical examination had failed to reveal any sign of tuberculosis. A von Pirquet test gave a positive, though not very marked reaction. A microscopical section of one of the nodules showed a round-cell and epithelioid-cell infiltration around the blood-vessels of the deeper parts of the corium and in the subcutaneous tissue.

(3) The third case was that of Maud McC—, aged 12 years, healthy-looking and well nourished. She has been under the care of Dr. H. Morley Fletcher, who had kindly allowed Dr. Adamson to show the case here. The eruption appeared one year ago, together with pains in the joints and slight attacks of vomiting. She was admitted to the ward. No visceral lesions were discovered, and although some of the larger joints were tender there was no swelling. Two weeks after admission she had an evening rise of temperature (101° to 102° F.), with rapid pulse at times, which continued for about a fortnight. This was accompanied by fresh joint pains and fresh eruption on the skin and slight sore throat. The left knee became tender and slightly swollen. The *eruption* consisted of an irregular mottling of dusky red colour upon the arms and legs and buttocks, and less marked on the cheeks. The mottling was in patches, each patch having a broken reticular aspect. The dusky red patches were slightly raised and very slightly infiltrated. To-day the eruption was much the same, but with the addition on the left cheek of a large circumscribed dusky-red infiltrated patch studded with reddish-brown pea-sized nodules. The diagnosis made some months ago was that of an unusual form of Bazin's disease or Erythema induratum scrofulosorum. To-day the patch on the cheek led the exhibitor to call it "sarcoid" of Darier. No "tuberculin" test has been used in this case.

In answer to a question that had been asked by Sir Malcolm Morris. Dr. ADAMSON said that the "sarcoid" of Darier differed from "Erythema induratum scrofulosorum" in the grouping of the nodules, in the less tendency to break down and ulcerate, and in their distribution on the face, trunk or extremities.

The PRESIDENT said he had seen marked improvement in some of these cases from the administration of thyroid. He found that tuberculin was uncertain in its action, and referred to a case in one young lady in which tuberculin had had no effect at all. He did not think the fact of a patient having the condition five years and not developing tuberculosis meant that the lesion was not tuberculous, as it was so slow-growing.

Dr. GALLOWAY said that he was glad to observe that Dr. Adamson hesitated in stating that the lesions in these cases were of tuberculous origin. He believed that the name "tuberculide," so commonly applied at the present time to various necrosing lesions of the skin, was a very unhappy one. In many of the cases so described the evidence brought forward of tuberculous infection of the lesions themselves or even elsewhere in the body was exceedingly slight, or entirely absent. The so-called "tuberculide" might as well be called X or Y or Z. In addition the term suggested by analogy the close relation between a syphilide and syphilis; obviously no such close relationship existed in the case of tuberculides. He had just completed the investigation of a case in which there occurred in a woman of about forty years of age indurated and necrosing lesions mainly of the lower extremities which might well be taken for the Erythema induratum of Bazin, though it was noteworthy that there was little or no tendency to extensive softening or ulceration of the lesions. Microscopic examination showed that the affected areas consisted of an infiltration with certain resemblances to the granuloma of tuberculosis. Multinucleated giant-cells were present as well as large mononuclear cells. So far as the histological examination was concerned the superficial resemblance to tubercle might well appear to an inexperienced observer. Yet no evidence of tuberculosis existed in this patient, though she had been carefully watched for a period of nearly five years, and careful inoculation of the material obtained from one of the lesions into a guinea-pig gave an entirely negative result. It was especially interesting to note that this woman had come under observation nearly five years ago suffering from severe anæmia of what appeared to be the chlorotic type, and during this period the indurating and necrosing lesions of the skin commenced to develop. They had rapidly improved when she was able to rest in bed and be properly cared for. Many of the cases described as "tuberculides" occurred in patients with a stagnating peripheral circulation, and it appeared to be possible that thrombotic lesions of cutaneous arterioles and venules, not necessarily of tuberculous origin in any sense of the word, were the real cause of these necrosing cutaneous diseases. He should very much like to hear Dr. Adamson say that he would go still a step forward and declare that the relationship of these necrosing lesions to tubercle was very doubtful, and that in many cases there was no such connection.

Dr. PERNET said he had examined some lesions of Acne agminata and concluded they were not tuberculous.* As to Bazin's disease, the full name, it must be remembered, was "Erythème induré des jeunes filles."

Dr. WHITFIELD said he believed one could, with great care, get rid of these lesions by means of tuberculin in very small doses. He had a girl under care who came with lesions which had always burst, and there were the scars of them on her legs. There was one lesion when the tuberculin treatment was commenced, three weeks ago, and that had not burst. He began with $\frac{1}{20000}$ of old

* *Vide* Radcliffe-Crocker's *Diseases of the Skin*, third edition, vol. ii. p. 1097.

tuberculin. She had had no reaction except the usual one at the site of the needle puncture.

Dr. WHITFIELD, answering Dr. Galloway, said he considered the only test was by tuberculin, because in many cases inoculation of the material did not kill a guinea-pig. One could not claim that a lesion was not tuberculous unless that were done.

In answer to Dr. Galloway, Dr. ADAMSON thought that there was abundant clinical evidence that the more familiar "tuberculides" were really of a tuberculous origin; that they had been so regarded for many years before the introduction of the term "tuberculide" was shown by their older names of "Lichen scrofulosorum," "Acne scrofulosorum," and "Erythema induratum scrofulosorum." That the type of case shown to-day under the name of "sarcoid" of Darier was really a toxi-tuberculide was, perhaps, not so clear, but there was abundant reason for regarding it as a toxic eruption.

Mr. HALDIN DAVIS showed a case of *Paget's disease of the nipple*. The patient, a woman, aged 58 years, exhibited on the left breast a circular excoriated area about two inches in diameter, which had totally destroyed the nipple, where the patient said that the ulceration had started. The ulcerated area was smooth, glazed and sharply defined. There was some induration in the region of the nipple, but no definite mass of malignant disease. There was no enlargement of the glands of the axilla. As the patient refused operation it was proposed to treat her with radium.

The PRESIDENT, discussing Dr. Davis's case, said that in two cases which absolutely refused operation an excellent result had ensued from the use of radium; there had been no recurrence and the breasts felt normal afterwards. He considered that thin women with small breasts had a worse outlook in the condition than those with larger breasts. He admitted that there were limitations to the use of radium in the condition.

Dr. MACLEOD considered that it was advisable in every case of Paget's disease of the nipples to resort to free excision. He had seen marked benefit, if not cure, in two cases from treatment with radium, but in view of the serious microscopic changes which are present as soon as the affection can be recognised clinically, he considered that to delay surgical procedures was unwarranted.

Dr. SEQUEIRA recalled a case of his in which there was Paget's disease of the glans penis in a man, aged 82 years, who was shown before the Section. In this case an operation was performed, the glans penis being excised. The patient died from uræmia, and at the autopsy a rounded mass of carcinoma was found in the bulbus urethræ.

Dr. WHITFIELD said he had seen in the laboratory specimens from a case of the kind, where the lesion, before the shrinkage, was not bigger than a shilling, yet there were blocked gland-ducts lying in the deepest part of the mammary gland close to the pectoral muscle. He therefore thought that the whole breast should be removed in any surgical treatment of Paget's disease.

Mr. Haldin Davis showed cases of *inherited alopecia*. The patients shown were the mother, aged 26 years, and her daughter, aged 2 years. The baby had been born with a normal amount of hair upon the scalp, but at the age of four months it fell off, leaving a fringe round the occiput and a single tuft of fine hair on the vertex of the skull. With these exceptions it was perfectly bald. The scalp was thin and atrophic and the blood-vessels were plainly visible through it. In fact the whole appearance of the scalp was similar to that seen in senile alopecia—very different to that seen in alopecia areata, where the scalp remains thick and fleshy even although totally bald.

The mother, who wore a wig, gave a history exactly similar to that of her baby. Her hair had fallen when she was a few months old, and with the exception of a fringe round the occiput she had remained bald ever since. Her eyebrows were unaffected, but she had no hair on her body. The nails were normal in both mother and baby.

Dr. Graham Little said that Sabouraud, in a recent series of 100 consecutive cases in his clinique, found that of the eighty-one cases in which there was a history 22 per cent. had hereditary transmission of the alopecia. On looking at some of his own cases he had been struck with the frequency with which that was so, even in ordinary common alopecia.

Dr. Dore showed a case of *chancre of the lower lip* in a woman, aged 26 years. When she was first seen, three weeks ago, there was a small hard nodule the size of a large pea below the red margin of the lower lip. There was very little inflammation of the skin apparent, and the lesion looked like a small cyst. The following week the small tumour had increased in size, and an enlarged gland could be felt under the chin. Material from the lesion showed the presence of the *Spirochæta pallida*, and the Wassermann test gave a positive result. When the case was shown there was a prominent growth about the size of a sixpenny-piece and a large submental gland. The patient was a married woman and had four healthy children. She had noticed no eruption on her skin nor suffered from sore throat, and with the exception of the lesions already mentioned and some enlargement of the posterior cervical glands there was no clinical evidence of syphilis.

Dr. Graham Little showed—(1) a *private case for diagnosis.* The patient was a gentleman, aged 48 years, retired from business. He had had several nervous "breakdowns." Was inclined to be shaky, was losing memory, and sleeping badly. Six months ago he began to get upon the glans penis two small circinate lesions, one of which had disappeared entirely, the other persisting. The present lesion was situated on the left segment of the glans, was the size of a threepenny-piece and nearly completely circular; the margin, slightly raised and enclosing it, somewhat different in colour from the ordinary. There were, and had been, no lesions on any other part of the body. The area affected was moderately itchy and very slightly scaly. There was some itching about the anal region which had resulted in some excoriation of the part.

The exhibitor offered the diagnosis of Lichen planus, and recalled a similar case shown to the Section by Dr. J. M. H. MacLeod.

(2) A *case for diagnosis* in a girl, aged, about 10 years. On the dorsum of the left hand just above the wrist there was a single lesion which constituted the eruption. This was, when first seen, ring-shaped, with the edge more prominent than the centre, of a livid red, and showed considerable induration. It was rather larger than a sixpenny-piece and had persisted for about eighteen months, slowly increasing in size. She had been under treatment for about three months with salicylic acid plasters and the lesion had somewhat flattened and become more uniform, so that the ring had been almost replaced by a nummular or disc-like hard swelling, not unlike a keloid. Upon firm pressure with a glass slide the colour was completely expelled. There were no subjective sensations connected with the lesion. The child was otherwise well; there was no history of tuberculosis.

The livid red colour and the persistence of the lesion under treatment for several months with strong salicylic acid plasters seemed to the exhibitor to negative the diagnosis of Granuloma annulare. He regarded it as falling into line with the group which Dr. Colcott Fox still regarded as a separate entity and called Erythema elevatum diutinum.

Dr. Gray said he saw a girl, aged 10 years, with somewhat similar patches on the knuckles, associated with marked rheumatic nodules in the neighbourhood of interphalangeal joints and elbows. The condition cleared up entirely by the use of salicylic acid externally and salicylate of soda internally.

(3) A case of *Œdema neonatorum*. The distinction between œdema and sclerema carefully made and insisted upon by Radcliffe-Crocker, is often confused by other authors. The variety now exhibited was difficult to class, for it was essentially an œdema, but there was no lividity, and the skin was waxy-white and smooth. The process, however, was transient in duration, and when the swelling was over the skin seemed but little altered, slight desquamation being present. The patient was a female, aged 6 weeks. The œdematous change had been noted at first in the feet and legs, then in the forearms and hands, but had not become generalised. The child when shown had a white and solid œdema of both the forearms, which ceased abruptly at the elbow, where there was a definite ridge separating the healthy tissue from the diseased. The legs had by now regained their usual size and aspect. The child, seen four days later, showed no signs of œdema of the forearm or hands, and seemed to be otherwise in fairly good health. There was no reason to suspect syphilis, and she had not had diarrhœa. Previous cases seen by the exhibitor had invariably ended fatally, but the prognosis in this case seemed favourable.

The PRESIDENT suggested giving small quantities of thyroid, through the mother if she was suckling the child.

Mr. J. E. R. McDONAGH gave a *microscopical demonstration* illustrating the life-cycle of the *Spirochæta pallida*, which is described in full with plates at p. 381.

Dr. MACLEOD showed a case of *multiple Lupus vulgaris* following measles in a girl, aged 5 years. The child had had measles two years previously, and in the convalescent stages of fever an eruption of reddish-brown spots had appeared, which, when first noticed, were about the size of a split-pea and were situated on both arms. These lesions had gradually grown, until at present they varied in size from a sixpence to a florin. They were confined to the arms, there being nine on one arm and ten on the other. The lesions were of the lupus type only; they had been considerably inflamed by some irritating ointment which had been applied, and several of them had become impetiginised. The child was one of a family of twelve, and there was no history of tuberculosis among them, nor, as far as could be

gathered, in the antecedents. A physical examination of the child failed to reveal any other stigmata of tuberculosis.

Cases of this sort were by no means uncommon, and had been demonstrated at the Society by Dr. Adamson, the exhibitor, and others. They suggested the possibility that they were the result of an embolic shower of tubercle bacilli, emanating from some broken-down focus of tuberculosis, such as a mesenteric or bronchial gland, which had reached the cutaneous capillaries and there produced the tubercular lesions.

Dr. Adamson said that it was not uncommon for these cases of multiple lupus after measles to develop tuberculous lesions in other parts. He could recall one case in which there was subsequently a post-pharyngeal abscess, two others had hip-disease, and another tubercular glands in the neck.

Dr. Sequeira showed (1) a case of *necrosis of the terminal phalanges of the left hand*. The patient, a florid man, aged 70 years, who had been a cabinet-maker, gave the following history:

Eight years ago a small "sore" appeared on the left thumb near the nail, and this spread until, ultimately, it involved the nail-bed. The nail separated and was shed. A similar process affected all the other nails of both hands, with the exception of the little finger of the

left hand and the right thumb. The nails separated by a moist process, but when the separation had occurred the lesions dried up and healed and the nails grew again. The patient stated that he was "gouty," and that he had picked out small pieces of chalk from the upper part of the pinna of the ears.

Since the fingers were first affected the skin has always been of a livid purplish colour, and shooting pains had been felt in the fingers in frosty weather.

The present attack began in February, 1912. He first experienced

Dr. Sequeira's case of Terminal Necrosis of Fingers.

shooting pains in the fingers of the left hand; these fingers became swollen, and suppuration occurred round the nails of the index, middle, and ring fingers. The nails again separated by a moist process, and the inflammation was attended with intense pain and tenderness. After the nails separated the ends of the fingers dried up, leaving brownish-black dry conical stumps, as shown in the accompanying photograph. The nail of the index finger has not yet separated. The middle toe of the right foot is somewhat similarly affected, but the nail has not yet separated. The urine was of specific gravity 1012. There was neither albumen nor sugar present. There were no tophi on the ears. The Wassermann reaction was negative. The

neck was radiographed, but there was no evidence of cervical rib. There was no alteration in sensation to heat or cold, but during the acute attacks there was intense hyperæsthesia of the fingers and back of the hand.

Under simple tonic treatment and antiseptic dressings the ulceration dried up, and this appeared to be the natural course of the affection.

The case aroused great interest. It was difficult to see how it could be classified except with the condition known as Raynaud's disease, but the asymmetry of the lesions was an unusual feature.

(2) A plethoric man, aged 42 years, suffering from *Lichen planus* of the palms. The patient, a corpulent, dyspnœic man, with congested swollen face, had suffered for the past five weeks from "pimples" on the hands and wrists. The eruption itched intensely. He was sent to Dr. Sequeira as a case of "cheiro-pompholyx," and, at first sight, the palms appeared to be studded with vesicles. A little closer examination showed that the eruption was really papular, the palms and the palmar surfaces of the fingers being covered with closely packed, rounded, flat swellings, varying in size from a pin's head to a hemp-seed. These papules were of the same colour as the rest of the skin. On the anterior surfaces of each wrist there were several characteristic papules of Lichen planus, of a lilac tint and smooth, burnished surface. There were a few patches of eruption of the normal type in front of each ankle.

The most interesting feature was, perhaps, the extraordinary eruption on the buccal mucosa, palate, and tongue, where the surfaces were covered with closely set white spots the size of a pin's head. On the tongue the eruption had coalesced into flat white patches.

The urine was acid, 1020 specific gravity. There was no albumen and no sugar.

Dr. Gray said he had a case a little more extensive than this, in which the condition was not confined to the palms, but also involved the flexor aspect of the forearms. He had treated one palm with two thirds of a pastille dose of X-rays and it had reacted severely, and, in point of fact, took longer to clear up than the untreated palm.

Dr. Walsh showed two cases *illustrating the relation of heart disease to skin-lesions*. Dr. Walsh explained that one of the cases he had intended to show had not come, and he had brought another. The first

patient was a woman, aged 36 years, who came in January, 1911, complaining of an irritating lesion on the left leg, it having begun as a spot three months before. There was a bad family history, and the lesion now shown was chronic eczema, which was moist at times. The mother died at the age of sixty of Graves's disease, and the father died at forty of general paralysis. One brother suffered from rheumatism, and one sister from palpitation; one brother died of bronchitis, and an uncle had rheumatic fever. This patient had palpitation, shortness of breath, dyspepsia, varicose veins, and the hair was falling out. There was a malar flush, and she suffered from cold hands and chilblains. Dr. Halls Dally reported that there was an aortic systolic blowing murmur conducted upwards in the vessels of the neck, with an accentuated second sound and a mitral sytolic murmur. He, Dr. Walsh, had found all kinds of skin-diseases connected with unsuspected cardiac defects, some of them myocardial, in regard to which he had referred to an expert as they were difficult to recognise. The eczema was one only of a large number of skin-conditions noted in a similar association; some might have psoriasis. He had taken the chronic cases consecutively, and found a large proportion suffering from some serious circulatory defect.

Dr. Walsh's next patient was a woman of middle age, who was attending a heart hospital, where many skin-lesions would be found if sought for. She was under the care of Dr. Halls Dally for depression, weakness, insomnia, and palpitation. She had had four attacks of influenza, and the cardiac condition was considered to be post-influenzal. She was obviously the subject of myxœdema, and her hair had been falling off a great deal. The skin was dry, rough, and the trunk and upper limbs were covered with close-set spiny papules suggesting Lichen ruber acuminatus.

Dr. Halls Dally said he took the blood-pressure in each of these cases, and he did it as a routine procedure. In the first case the blood-pressure was normal. In the second, when she came for treatment on July 6th, 1911, the systolic pressure (Pachon) was 210, while the diastolic was 110. On September 19th, 1912, the systolic pressure had been reduced to 180 and the diastolic to 100. Here cardiac debility was manifest consequent upon cardial degeneration. The first case was an early compensated aortic stenosis, with some mitral regurgitation superadded, which would probably account for the circulatory disturbance. Dr. Walsh had been to his (the speaker's) out-patient department at the National Hospital for Diseases of the Heart and there had examined many consecutive

cases of heart disease. In some of these patients there appeared to be a direct and close connection between general circulatory disturbance and skin-affections.

The PRESIDENT said the myxœdema in the second patient would account for the skin-condition.

Dr. WHITFIELD said the case was one of myxœdema, which had the skin-lesions usually associated with that condition and which had always been recognised. The fact that this patient had myocardial degeneration was most likely a coincidence. He imagined it was not claimed that most cases of myocardial lesion showed this particular dermatosis. The balance of evidence was that the dermatosis was connected with the myxœdema, and not with the cardiac lesions. He did not deny that cardiac lesions might have a marked influence on the production of skin-lesions, but if these cases now shown were the best which Dr. Walsh could show to establish his contention they were unfortunate instances, because they could be explained more easily in another way.

Dr. F. PARKES WEBER agreed with Dr. Whitfield that the two cases could scarcely be accepted as supporting the theory advanced by Dr. Walsh. The second patient had obvious myxœdema, and myœdema might favour myocardial degeneration and likewise give rise to skin-changes. In the first case the cardiac valvular defect was compensated and the skin-lesion was unilateral. He asked Dr. Walsh whether the skin-changes which he had noticed occurred in association with compensated or with uncompensated cardiac disease. Failure of compensation might lead to general œdema and sometimes to extreme passive venous congestion of the skin, a kind of "Livedo annularis" or "Erythema figuratum" in the extremities.

Dr. GRAY asked how Dr. Walsh correlated the heart condition with the skin-lesion, and whether any blood-pressure observations had been carried out.

Dr. WALSH replied that he could only say in the most general terms that the associated skin-lesions appeared to him to be due to some disturbance of the balance of circulation on the surface of the body, in which event the nutrition and general defensive mechanism of the cutaneous tissues must necessarily be upset; probably in most instances there was some kind of traumatism concerned. He had a long list of cases illustrating the point, but unfortunately the illustrative cases chosen had not been able to come. He wanted to bring the point to the attention of members, though nothing could, of course, be established by two cases. He went over to Dr. Meachen's clinique and saw his chronic cases, and the results were astonishing, and he asked members of the Section to examine the heart in fifty consecutive chronic cases. He believed the skin-condition, in some instances, to be a sign of failing compensation, manifested much earlier than those set out in text-books; indeed, he regarded the skin-condition as a delicate symptomatic clinical test.

Note.—Excluding diseases of such definite and obvious origin as scabies, ringworm, syphilis, tuberculosis and so on, any sort of cutaneous lesion should be investigated, provided it were chronic or recurrent.

CURRENT LITERATURE.

PELLAGRA. Oliver S. Ormsby. (*Journ. of Cut. Dis.*, October, 1912, p. 589.)

This paper constitutes an abstract of the work done by the Pellagra Commission appointed in 1909 to investigate the disease in Illinois. The Commission was under the presidency of Dr. Frank Billings, while Dr. Ormsby, the writer of this paper, acted as Secretary.

In this contribution pellagra, as it has been met with in Illinois where about 500 cases have been recognised, is described concisely. The following is a *résumé* of the paper.

Pellagra is a systematic disorder characterised by three main groups of symptoms, viz. a cutaneous exanthem, symptoms of gastro-intestinal disturbance, and more or less well-marked general debility and emaciation. The only reliable diagnostic symptom was the cutaneous eruption. This involved the dorsa of the hands and wrists, some part of the face, neck or scalp, and occasionally the feet and ankles. Sometimes the arms and chest were affected, and in a few cases the ears and palms. The lesions were symmetrical and consisted of an erythematous area forming a patch of dermatitis like that caused by the sun. This persisted for about a fortnight, when desquamation occurred and occasionally pigmentation, or after the desquamation had become complete the affected area might become lighter than formerly. In the more active cases bullous lesions might develop on the erythematous base and pyogenic infection might follow. Atrophy of the skin was only noticeable to a slight degree.

That sunlight played a part in producing the location of lesions was demonstrated by making suspected patients wear fenestrated gloves, when the eruption was largely limited to the exposed areas. On the other hand, patients who were not exposed to the direct rays of the sun at any time were met with who exhibited typical lesions, and bedridden patients developed lesions in the same situation as those able to be out of doors.

The gastro-intestinal symptoms were very frequent, but not always marked, and might be absent. They consisted of diarrhœa, with liquid, putrescent stools of peculiar odour, which was thought by some to be characteristic. More or less anorexia was present as a rule, but sometimes the appetite was excessive. Emaciation and general weakness were present in a degree more or less corresponding to the severity of the gastro-intestinal symptoms. Sometimes, besides these features, there was a general tendency toward the development of mental disorder of a delirious type, and in the later stages to the occurrence of a central neuritis syndrome. The course of the disease was variable; in many cases it consisted of annual exacerbations lasting one or two months with apparent recovery in the interval, while in other cases only one attack occurred. The percentages of recurrences in individuals recovering from the attack in 1909 was 31; in 1910, 13. In 1911, of the 1910 attacks which did not prove fatal only 8 per cent. recurred. Death might result in any attack, whether the first or a recurrence. This might transpire during the acute phase, apparently from general exhaustion, or at a later period, after all characteristic pellagrous lesions had disappeared, with symptoms of central neuritis. The mortality had been

very high in that State, pellagra being given as the immediate cause of death in practically 50 per cent. of the 258 cases at Peoria State Hospital.

Symptoms which appeared to be of bad prognostic import were the early appearance in severe degree of gastro-intestinal and mouth symptoms, marked emaciation, and the occurrence of nervous symptoms, such as delirium and signs of central neuritis. Moderate anæmia was the rule, with a colour-index which was frequently normal or even slightly above normal. Leucocytosis occurred occasionally in severe cases, but as a rule the number of white cells was within the normal limits. There appeared to be no characteristic change in the relative proportions of the different varieties of white cells. No abnormalities were noticeable in the size, shape or staining properties of the red cells. No abnormal bodies were found either in fresh or stained specimens. Almost all cultures were sterile.

In the urine, indican had been increased, and there had been variation in the actual quantity, specific gravity, and composition. A trace of albumen, with hyaline casts, was not uncommon.

The cerebro-spinal fluid showed no increase of cell elements or albumen content, and cultures have been uniformly sterile.

Complement-fixation tests with the blood-serum of pellagrins as an amboceptor and extracts of pellagrous liver, tongue and spleen as antigen, gave results which cannot be regarded as specific at present. Negatives with positive cases and positives with normal sera were encountered too frequently to permit of any interpretation.

Anaphylactic tests by von Pirquet's method, using extracts of healthy and damaged corn, proved uniformly negative.

The post-mortem findings were those of a generalised intoxication. Fatty degeneration of the liver, with inflammation and ulceration of the intestinal mucosa, and the occurrence of islets of subacute inflammatory exudate in the portal canals of the liver suggested an intoxication of intestinal origin, which might be either primary or secondary. There was nothing characteristic of pellagra in the lesions found in the nervous system, and they could be regarded only as evidence of intoxication.

Inoculation of monkeys and other animals with tissue emulsions and body fluids was entirely unsuccessful. Feeding with the dejecta of human pellagrins gave rise to no symptoms. Similar negative results were obtained from inoculations with organisms isolated from these stools.

Feeding experiments with corn, both healthy and in spoiled condition, were without result. Injection of extracts from corn contaminated with five different moulds was found to be toxic in one instance only, the organism being *Monascus purpureus*. Another sample containing a blue-green peniciilium and contaminated with bacteria was highly toxic. Corn had formed but a small part of the hospital dietaries and the quality was excellent. Careful observation of the squads of individuals fed with a large excess of corn products for a period of twelve months, compared with a similar number given a strictly corn-free diet, revealed no differences in the number of cases or severity of the pellagra which developed in each. Detailed study of the general diet of the Peoria State Hospital revealed a deficiency in protein constituents and especially in animal protein. Comparisons between the average amount of meat supplied to the inmates of that hospital with the other State hospitals suggested a greater or less

degree of deficiency in all. It was also noticeable, although it might be accidental, that pellagra had diminished in Peoria and Dunning coincidently with an increase in the meat supplied, while at Elgin the number of pellagrins had increased with the decrease in the amount of meat provided *per capita*.

The chemical analysis of one pellagrin's brain showed no deficiency in sulphur or phosphorus, but only a disturbance in the combinations of the former. This was quoted only in relation to the possibility of a deficiency in certain elements in the diet which had been suggested as a cause for pellagra.

The conclusion arrived at by the writer was that pellagra appeared to be due to infection with some living micro-organism, the habitat of which was possibly the intestinal canal. He considered that the part played by insects in the transmission of the disease was conjectural.

J. M. H. M.

MULTIPLE SUBCUTANEOUS HEMANGIOMAS, TOGETHER WITH MULTIPLE LIPOMAS, OCCURRING IN ENORMOUS NUMBERS IN AN OTHERWISE HEALTHY MUSCULAR SUBJECT. JOHN T. BOWEN, M.D. (*Amer. Journ. Med. Sci.*, vol. cxliv, No. 2, August, 1912.)

THIS case is of interest on account of the numerous recent observations on the development of blood-vessels in the tissues forming different types of angioma. Dr. Bowen's case is different from many of the reported cases, which are obviously degenerative in origin and possibly associated with severe types of toxæmia, sometimes arising from visceral disease. In the case of which a short description is given the angioma seems to result in the formation of an unduly vascularised lipoma.

The patient, a native of Russia, aged 36 years, had lived in America for twenty-six years, and was in other respects perfectly healthy; his family history also was good. His muscular development was much above the normal as he had been a professional boxer of considerable reputation not only in the United States but in other lands. He was 147 lb. in weight on the first date of observation. The tumours from which he suffered had been observed first of all three or four years ago, some time after he had given up his pugilistic career. The first lesions made their appearance on the back, were few in number, but steadily multiplied. They were now numerous, in size varying from that of a small pea to a pigeon's egg, rounded or elongated in shape. Most of them were subcutaneous; in a few instances the corium was adherent to the tumour. The surface of the skin was normal, except that in a few places—not necessarily over the tumours—there was a bluish-red colour from venous stasis. This was the condition in March, 1910.

He was seen again in November of the same year, when the nodules had increased considerably in numbers. A nodule had appeared on the tip of the tongue, which had attained to the size of a bean, and as this annoyed him in eating and drinking the lesion was excised and the wound healed quickly.

The patient was again seen in October, 1911, and in March, 1912, when a more complete examination was made. The lesions had again increased in numbers and some of them also in size. The distribution was mainly over the trunk, and to a less extent on the thighs and arms. Some of the larger ones on the back and

loins had reached the size of a hen's egg, the largest one being situated on the back, over the left scapular region. A few were now to be observed on the forearms and the legs. The face and the external genitals were free. The patient was in perfectly good health and suffered from no visceral lesions. Several of the tumours of varying sizes were excised for microscopic examination, and in most instances they shelled out easily after incision of the overlying skin, and presented a yellowish appearance on section resembling lipomas. The smaller tumours were composed of a new growth of blood-vessels, which seemed to infiltrate the affected tissue in every direction within the limits of the tumour. No distinct capsule could be detected, but the tumour was sharply bounded from the normal tissue surrounding it, as was evidenced by the ease with which it was expressed after incision. In the larger tumours a greater amount of fatty tissue was observed, the angiomatous tissue being much smaller in comparison. The largest tumours were almost entirely composed of fat and hardly more vascular than an ordinary lipoma. The lesion on the tongue was totally excised and proved to be a pure hæmangioma with no fat apparent.

It appears, therefore, in this case that the development and increase of the blood-vessels was the primary lesion, and that gradually fat formed in the neighbourhood of the lesions, suggesting that the angiomatous growth invaded the fatty tissue, causing an increase in it which in time overshadowed and dominated the vascular growth, so that the larger tumours became indistinguishable from true lipomas.

Three microscopic sections illustrate the paper. J. G.

THE HISTOLOGY OF SULPHUR DERMATITIS. Kopytowski. (*Archiv f. Derm. u. Syph.*, October, 1912.)

The author relates in detail the histological changes observed in eight cases treated with 10 per cent., 25 per cent. and 50 per cent. sulphur-vaseline ointment, or 50 per cent. starch sulphur powder, over periods varying from two to four days. The applications were made twice daily on normal scrotal skin which was kept covered with cotton-wool. Just as in the therapy with sulphur it was not possible to establish a definite relation between the duration or percentage composition of the applications and the intensity of the reaction obtained. The latter appears to rest on an individual idiosyncrasy of the subject. The main effects of the inflammation are observed in the papillary body and the upper layers of the cutis, in which there can be seen dilatation of the blood-vessels and marked proliferation of their endothelial lining—a specific character of the influence of sulphur. These proliferating endothelial cells actually reach the epidermis, where they become atrophic and degenerate. Much pigment is also found throughout the basal cell layer and stratum spinosum. The horny layers undergo parakeratosis, and consist mainly of only partially cornified, loosely connected cell-layers. A mononuclear leucocytosis was present in moderate degree. The action of sulphur is, therefore, more a proliferative than a degenerative one, but it cannot be determined histologically whether it depends on an oxydation of the sulphur by the tissues—as stated by Unna—or not.

H. C. S.

FOLLICULITIS AND PERIFOLLICULITIS ULCERANS SERPIGINOSA. Bizzozero. (*Archiv f. Derm. u. Syph.*, October, 1912.

Under this somewhat cumbersome title the author discusses the diagnosis, ætiology and histology of a peculiar affection in a man, aged 68 years. The lesions were confined to the nape of the neck, the scalp, the forehead, and the left eyebrow. They had been present on and off for thirty-two years. There was no history of syphilis, the Wassermann and von Pirquet reactions were negative, and every effort to grow a fungus from the follicular and perifollicular abscesses had proved fruitless. *Staphylococcus aureus* was the only organism recovered. The colour of the lesions was red or reddish-violet. They began as small peppercorn-sized nodules of a dark-red colour, of firm consistency, the centre raised and with a white apex, through the centre of which protruded a hair. Microscopical examination of such a nodule revealed masses of polymorphonuclear leucocytes in the follicle, and a complete destruction of the hair-root. Eosinophiles were present in quantity, and many of the prickle-cells, as a result of the destruction of their processes, were lying isolated in the cell-layers, suggesting by their spherical appearance the *corps ronds* of Darier. The intra-follicular abscess communicated freely with an intense perifollicular infiltration through a distinct opening in the root-sheath, and there was a complete absence of elastic fibres in the perifollicular tissues. Giant-cells were plentiful, and granulation-tissue seemed to mark out very distinctly the limits of the perifollicular infection. At the periphery of the infiltrated zone was another hair-follicle, the proximal side of which appeared to be generously infiltrated with pus-cells, whilst that directed towards the normal tissues presented but a few, thus suggesting that the whole infection was primarily a perifollicular one in this case, not a follicular one as in sycosis.

The difficulty of diagnosis, when the primary nodules have given way to infiltrated and serpiginously spreading ulcerating patches, with contraction of the underlying granulation-tissue, partial epithelialisation of old ulcers, crusting over of others, and loss of hair in places, can well be imagined. The author discusses in detail the differential diagnosis from Acne keloid, lupoid sycosis, Dermatitis follicularis et perifolliculitis conglobata (Lang), and Unna's Ulerythema sycosiforme.

The disease known as Perifolliculitis necrotica (von Janovsky) he regards as in all probability identical with his case, although in the former the ulceration extended to the subcutaneous tissue. Bizzozero is not able to definitely fix an ætiological factor. He suggests three possibilities: (1) Some unknown micro-organism which might be responsible for a primary formation of granulation-tissue which became secondarily invaded by *Staphylococcus aureus*; (2) that such a micro-organism might be responsible for both processes—the chronic and the acute—as Beurman's sporotrichium is known to be capable of doing; or that (3) the whole process started per *Staphylococcus aureus* as a common sycosis, and later became modified by the formation of scar-tissue and the irritating presence of the remaining coarse brush-like hairs (as described by von Scheuer in Dermatitis papillaris capillitii), until it presented the appearance the author has described.

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